

BEDNOV, N.I.; KAPUSTIN, V.A.

Electric power consumption and operational indices of the  
electrification of agricultural districts of the Tatar A.S.S.R.  
Trudy Kazan.fil.AN SSSR.Ser.energ.i vod.khoz. no.2:49-58 '61.

(MIRA 15:3)

(Tatar A.S.S.R.—Electrification)

KAPUSTIN, V.A.; APPEL', S.G.

Problem concerning the fuel power resources of the agricultural  
districts of the Tatar A.S.S.R. Trudy Kazan.fil.AN SSSR.Ser.  
energ.i vod.khoz. no.2:59-73 '61. (MIRA 15:3)  
(Tatar A.S.S.R.--Fuel)

KOROVYAKOVSKIY, Il'ya Grigor'yevich, dots.; KAPUSTIN, Viktor Aleksandrovich; ROSHKOVSKAYA, Nona Petrovna; SHITIKOV, Mikhail Gavrilovich; PEREL'MUTER, N.M., red.; PLESKO, Ye.P., red.izd-va; VDOVINA, V.M., tekhn. red.

[Electric power supply of lumbering enterprises] Elektro-snabzhenie lesozagotovitel'nykh predpriatii. Pod obshchei red. I.G.Koroviakovskogo. Moskva, Goslesbumizdat, 1962. 171 p.  
(MIRA 16:4)

(Electricity in lumbering)

GORSHKOV, D.S., otv. red.; ASHMARINA, L.A., red.; UDILOV, V.I., glav.  
inzh., red.; BAYANOV, M.A., starshiy nauchnyy sotr., red.;  
KAPUSTIN, V.A., starshiy nauchnyy sotr., red.; STATKEVICH, I.I.,  
starshiy inzh.; OSIPOV, A.I., starshiy nauchnyy sotr., otv. red.

[Transactions of the Sverdlovsk Scientific Research Institute for  
the Lumbering Industry] Trudy Sverdlovskogo nauchno-issledovatel'-  
skogo instituta lesnoy promyshlennosti. [n.p.] TSentr. nauchno-  
issl. in-t mekhanizatsii i energetiki lesnoi promyshl., 1960. 56 p.  
(MIRA 15:1)

1. Sverdlovsk. Sverdlovskiy nauchno-issledovatel'skiy institut les-  
noy promyshlennosti. 2. Direktor Sverdlovskogo nauchno-issledova-  
tel'skogo instituta lesnoy promyshlennosti (for Gorshkov).
3. TSentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii  
i energetiki lesnoy promyshlennosti (for Osipov).  
(Lumbering--Research)

KAPUSTIN, V. F.

KAPUSTIN, V. F. Atlas of blood parasites of agricultural animals. Moscow, Agricultural Publishing House, 1949. Price 1 ruble, 70 kopeks; 5 quires; 25,000 copies.

Source: Veterinariya; 26; 9; September 1949 uncl  
TAECCN

KAPUSTIN, V. F.

Atlas Gribov Patogennykh Dlya Sel'skokhozyaystvennykh Zhivotnykh I Ptits [Atlas of  
Mushrooms, which are Poisonous to Farm Animals and Poultry, by] A. Kh. Sarkisov,  
V. F. Kapustin [1 Dr.] Moskva, Sel'khozgiz, 1953.  
158 p. Illus.  
At Head of Title: Russia. Ministerstvo Sel'skogo Khozyaystva SSSR.

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STUCHINSKIY, Abram Moiseyevich, vrach; KAPUSTIN, Vasilii Grigor'yevich,  
inzh.; TUPIKOV, A.I., red.; PULIN, L.I., tekhn.red.

[Advice for miners on the prevention of injuries and diseases]  
Sovety shakhteru o preduprezhdenii travm i zabolevani. Tula,  
Tul'skoe knizhnoe izd-vo, 1959. 69 p. (MIRA 13:10)  
(MINERS--DISEASES AND HYGIENE)

KAPUSTIN, V.K.

AUTHOR: Kapustin, V.K., Engineer, 128-58-4-5/18

TITLE: Minor Mechanization in the Foundry (Malaya mekhanizatsiya v liteynom proizvodstve) Production Practice of the Plant "Serp i Molot" in Khar'kov (Iz opyta raboty zavoda "Serp i Molot" v Khar'kove)

PERIODICAL: Liteynoye Proizvodstvo, 1958, No. 4, pp 11-13 (USSR)

ABSTRACT: In the foundry of the plant "Serp i Molot", heavy parts of engines for combines, such as cylinder blocks, were pushed from the foundry conveyer by two workers using crow-bars for levers. This operation- which caused frequent stoppage of the roller conveyer and broken roller axes - has been mechanized by a motor-driven roller conveyer mounted close to the end of the major foundry conveyer. Now, the operator needs to press only a pedal for this operation. A description is also given of a pneumatic turning mechanism for tilting heavy mold boxes when removing them from the manually-operated molding machine "S-4" (model "283"), and a pneumatic vibrator for mold sand-bunkers. All three devices are described in detail and illustrated by detailed drawings.

There are 5 figures.

AVAILABLE: Library of Congress

Card 1/1 1. Industrial engineering 2. Materials-Maneuverability



AUTHOR: Kapustin, V.K. SOV/128-58-12-7/21

TITLE: A Modernized Worm-Screw Installation For Melting Cast-Iron  
Chips in a Cupola Furnace (Modernizirovannaya shnekovaya  
ustanovka dlya pereplava chugunnoy struzhki v vagranke)

PERIODICAL: Liteynoye proizvodstvo, 1958, Nr 12, pp 13 - 14 (USSR)

ABSTRACT: Information is given on a modernized cupola furnace for  
melting cast-iron chips (with the use of a worm-screw feed)  
ensuring the complex mechanization of the chip preparation  
and supply to the cupola. The furnace was modernized under  
the supervision of A.I. Toropov, Chief Metallurgist of the  
Kharkov "Serp i Molot" Plant. The modernized installation,  
which is described in detail, was tested and put into prac-  
tical use. There are 3 diagrams.

Card 1/1

KAPUSTIN, B.N., glav. inzh.; GVOZDEV, T.T., glav. inzh.; GRIGOROVICH, V.D., inzh.; KONDRASHENKO, A.A., inzh.; ABADEYEV, Yu.A., inzh.; RYADNOV, A.A., inzh.; YEGORYCHEV, V.P., inzh.; SHMEL'KIN, B.A., inzh.; MARSHUTIN, S.F., inzh.; KHODZHABARONOV, K.G., inzh.; FEDOSOVA, Ye.M., tekhnik; OSIN, V.I., tekhnik; SEMENOVA, Ye.P., tekhnik; AVSARAGOVA, G.A., tekhnik; PASHKEYEV, D.A., inzh.; KAPUSTIN, V.N., inzh.; NAGOROV, L.A., inzh.; IONOV, I.T., inzh.; KOPEYKINA, L.M., inzh.; TELEPNEVA, T.P., tekhnik; CHAKURIN, Zh.G., tekhnik

[Album of the mechanization of labor-consuming processes in stockbreeding] Al'bom mekhanizatsii trudoemkikh protsessov v zhivotnovodstve. Moskva, Izd-vo Giprosel'khoza. No.4. [Equipment and supplies for the mechanization of labor-consuming processes on livestock farms] Oborudovanie i inventar' dlia mekhanizatsii trudoemkikh protsessov na zhivotnovodcheskikh fermakh. 1959 [cover: 1961. 229] p. (MIRA 15:7)

1. Gosudarstvennyy institut po proyektirovaniyu sel'skokhozyaystvennykh sooruzheniy (for Kapustin, Grigorovich, Kondrashenko, Abadeyev, Ryadnov, Yegorychev, Shmel'kin, Marshutin, Khodzhabaronov, Fedosova, Osin, Semenova, Avsaragova).

(Continued on next card)

KAPUSTIN, B.N.---(continued). Card 2.

2. Respublikanskiy gosudarstvennyy institut po proyektirovaniyu sovkhoznogo stroitel'stva (for Gvozdev, Pashkeyev, Kapustin, V.N., Nagorov, Ionov, Kopeykina, Telepneva, Chakurin).

(Agricultural machinery)

KAPUSTIN, Viktor Pavlovich; TAIROVA, V.N., red.; BELOVA, N.N.,  
~~tekhn. red.~~

[Transportation of fruit, vegetables, and potatoes]  
Transportirovka plodov, ovoshchei i kartofelia. Moskva,  
Sel'khozizdat, 1963. 182 p. (MIRA 16:9)  
(Fruit—Transportation) (Vegetables—Transportation)

KAPUSTIN, V.S.

[Direct current electric crane motors; manual on maintenance and repair]  
Kranovye elektrodvigateli postoiannogo toka; rukovodstvo po ukhodu i remontu.  
Moskva, Izd-vo Ministerstva rechnogo flota SSSR, 1953. 50 p. (MLRA 6:8)  
(Electric motors, Direct current)

SHPITSMAKHER, O.A., DENISOVSKAYA, YE.N., KAPUSTIN, V.V.

Peat Industry

Turning cut peat at accelerated tractor speed. Torf.prom. 29 no. 5, 1952

Monthly List of Russian Accessions, Library of Congress, August, 1952. UNCLASSIFIED.

KAPUSTIN, V.V. ....

Improving the design of continuous heat treating and  
pickling units. Stal' 24 no.1:85-87 Ja '64.

(MIRA 17:2)

BONDARENKO, S.S.; KASHANSKIY, B.R.; KAPUSTIN, V.Ya.; KRAMARENKO,  
P.T.; LOVI, A.A.; MIKHEYEV, I.V.; POLETAYEV, A.S.;  
SELEZNEV, V.I.; SUDAKOV, S.V., polkovnik, red.; VIL'CHINSKIY,  
I.K., red.

[Instruction in firing at night from small arms and grenade  
launchers] Obuchenie strel'be noch'iu iz strelkovogo oruzhiia  
i granatometov. Moskva, Voenizdat, 1964. 214 p.

(MIRA 18:4)



KAPUSTIN, V. Ye.

COUNTRY : Diseases of Farm Animals. R  
 CATEGORY : Diseases Caused by Helminths.  
 ABS. JOUR. : RZhBiol., No. 3, 1959, No. 12181  
 AUTHOR : Kolpakov, V. V.; Kapustin, V. Ye.  
 : Moscow Technological Institute of the Meat  
 : Experiment on Using Defatted Must. Made  
 : from the Seeds of Watermelons and Melons in  
 : Drepanidium Infection of Geese.  
 ORIG. PUB. : Sb. stud. rabot. Mosk. tekhnol. in-t myasn. i  
 : molochn. prom-sti, 1958, vyp. 5, 110-111  
 ABSTRACT : No effect was obtained when a decoction of  
 : melon seeds was used and watermelon seeds  
 : proved a poor preparation for a veratufuge  
 : treatment.

Card:

1/1

\*and Dairy Industry.

KAPUSTIN, Ye.

Scientific research on labor and wages in the light of the  
decisions of the November plenum of the Control Committee  
of the C.P.S.U. Biul.nauch.inform.trud i zar.plata no.1:3-9  
'59. (MIRA 12:4)

(Production standards)

KAPUSTIN, Ye.; MYSEV, N.

Practice in comparing the degree of work complicacy using the analytical method with expert evaluation in the Kuybyshev Economic Council.  
Biul. nauch. inform.: trud i zar. plata 4 no.1:23-27 '61.

(MIRA 15:1)

(Kuybyshev Province--Job analysis)

KAPUSTIN, Ye.

Research in the field of labor economics in the light of the decisions  
of the 22d Congress of the CPSU. Biul.nauch. inform.: trud i zar.  
plata 5 no.1:3-12 '62. (MIRA 15:2)  
(Labor and laboring classes--Research)

KAPUSTIN, Ye.I., kand.ekon.nauk; LAVROV, V.V.; RYUMIN, S.M.; KONSTANTINOV, Yu.A.; PRAVDIN, D.I., kand.ekon.nauk; KIRILLOVA, N.I.; RIMASHEVSKAYA, N.M.; ANTROPOV, B.F.; RYABKOV, F.S.; POPOV, G.A.; DEM'YANOVA, V.A.; SMOIYAR, I.M.; ACHARKAN, V.A., kand. yurid.nauk; BRONER, D.L.; SHEPTUN, Ye.V.; KRYAZHEV, V.G.; ALESHINA, F.Yu., kand. ekon. nauk; KUZNETSOVA, N.P.; MARKOVICH, M.B.; BIBIK, L.F.; BUDARINA, V., red.; GRIGOR'YEVA, I., mladshiy red.; CHEPELEVA, O., tekhn. red.

[Public consumption funds and improving the welfare of the people in the U.S.S.R.] Obshchestvennye fondy i rost blagosostoianiia naroda v SSSR. Moskva, Sotsekgiz, 1962. 222 p. (MIRA 15:6)

(Cost and standard of living)

KASITSKIY, I.; MANEVICH, Ye.; ZVEREV, A.; KAPUSTIN, Ye.;  
NEMCHINOV, V., akademik; VOROB'YEVA, A.; YEVSTAF'YEV, G.;  
SHAKHURIN, A.; KOSYACHENKO, G.; PLOTNIKOV, K.; AL'TER, L.;  
ROTSHTEYN, L.; SPIRIDONOVA, N.; MASLOVA, N.; RUSANOV, Ye.;  
KAPITONOV, B.; KULIYEV, T.; GATOVSKIY, L.

Problems of the economic stimulation of enterprises.  
Vop. ekon. no.11:87-142 N 162. (MIRA 15:11)

1. Komitet Vsesoyuznogo soveta nauchno-tekhnicheskikh obshchestv po ekonomike i organizatsii proizvodstva (for Kasitskiy).
2. Institut ekonomiki AN SSSR for Manivich, Zverev, Vorob'yeva, Yevstaf'yev, Shakhurin, Plotnikov, Maslova, Rusanov, Kapitonov).
3. Nauchno-issledovatel'skiy institut truda (for Kapustin).
4. Nauchno-issledovatel'skiy finansovyy institut (for Kosyachenko).
5. Nauchno-issledovatel'skiy ekonomicheskii institut Gosudarstvennyy nauchno-ekonomicheskogo soveta Soveta Ministrov SSSR (for Al'ter).

(Continued on next card)

KASITSKIY, I.---(continued) Card 2.

6. Gosudarstvennyy nauchno-ekonomicheskiy sovet Soveta  
Ministrov SSSR (for Rotshteyn). 7. Moskovskiy gosudarstvennyy  
universitet (for Spiridonova). 8. Azerbaydzhanskiy  
gosudarstvennyy universitet imeni S.M. Kirova (for Kuliyeu).  
9. Predsedatel' Nauchnogo soveta po khozyaystvennomu  
raschetu i material'nomu stimulirovaniyu proizvodstva,  
chlen-korrespondent AN SSSR (for Gatovskiy).  
(Industrial management)  
(Incentives in industry)

KAPUSTIN, Ye.

Some problems in the further improvement of the wage schedule.

Sots. trud 6 no.4:15-27 Ap '61.

(MIRA 16:7)

(Wage payment systems)



KAPUSTIN, Ya.

Labor productivity and wages. Sots.trud 7 no.4:11-23 Ap '62.  
(MIRA 16:1)

(Wages and labor productivity)

KAFUSTIN, Ye. A., Engineer      Cand Tech Sci

Dissertation: "Influence of Gas Motion on  
Heat Exchange Processes in High-Temperature  
Flame Furnaces."

19/1/50

Moscow Order of the Labor Red Banner Inst of  
Steel imeni I. V. Stalin

SO Vecheryaya Moskva  
Sum 71

KAPUSTIN, E. A.

3

USSR

influence of the pattern of gas travel on heat-exchange processes in high-temperature flame furnaces. M. A. Glinkov and E. A. Kapustin. *Moskov. Inst. Stali im. T. V. Selezneva, Strukturalno-Metallurg. Ser.* 30, 85-111 (1951).—An extensive study of the heating mechanism in a 10-ton exptl. open-hearth furnace fired with a natural gas burner, the inclination of which to the bath was changed from 10 to 40°. A greater inclination of the flame widens the flame and spreads it in the direction perpendicular to the axis of the burner until it strikes the surface of the bath. After this the section of the flame becomes U-shaped and has a greater thermal efficiency. Temp. distribution obtained with different positions of the burner is given in diagrams. 18 references. J. D. Gat

M 82



137-50-6-11702

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 70 (USSR)

AUTHOR: Kapustin, Ye.A.

TITLE: Special Features of the Thermal Performance of the 350-t Tilting Open-hearth Furnace at the Azovstal' Works When Oxygen is Provided in the Fuel Flame (Osobennosti teplovoy raboty 350-t martenovskoy kachayushcheysya pechi zavoda "Azovstal'" pri podache kisloroda v fakel)

PERIODICAL: V sb.: Primeneniye kisloroda v metallurgii. Moscow, Metallurgizdat, 1957, pp 60-67

ABSTRACT: When the mean hourly delivery of  $O_2$  to enrich the blow was increased from 1480 to 2440  $m^3/hr$ , the maximum heat consumption of the bath during the preheat rose from 150 to 210,000  $kcal/m^3/hr$ , the temperature of the flame at the Nr 1 door from 1840 to 1940°C and at the Nr 3 door from 1775 to 1840°, while when the  $O_2$  flow rate rose to 3000  $m^3/hr$ , the maximum temperature of the flame attained 2050° and more. As a result, when the degree of enrichment of the blow was 25%, the duration of the melt per 1000  $m^3$   $O_2$  consumed dimin-

137-58-6-11702

Special Features of the Thermal (cont.)

time saving was 0.161 hour at 27% enrichment and 0.207 hour at 29% enrichment. The use of O<sub>2</sub> to enrich the blow is effective during all periods of the heat, but is greatest during charging, preheat, and hot metal addition. Delivery of O<sub>2</sub> during this period produces a reduction of 0.238 hour in heat time per 1000 m<sup>3</sup> O<sub>2</sub> consumed, while use of the same amount of O<sub>2</sub> during the melt-down period saves 0.166 hour, and use during the finishing period saves 0.155 hour.

N.I.

1. Open hearth furnaces--Performance
2. Oxygen--Applications

Card 2/2

SOV/137-58-7-14385

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 63 (USSR)

AUTHORS: Kapustin, Ye.A., Karpov, G.D., Khiish, L.I.

TITLE: Output Rate and Thermal Regime of a Tilting Open Hearth in the Course of a Campaign (Proizvoditel'nost i teplovaya rabota kachayushcheysya martenovskoy pechi na protyazhenii yeye kampanii)

PERIODICAL: Tr. Donetsk. otd. Nauchno-tekhn. o-va chernoy metallurgii, 1957, Nr 5, pp 23-38

ABSTRACT: The results of a statistical analysis of the results of operation of tilting open hearths with conventional silica-brick and magnesite-chromite roofs in the course of full campaigns are adduced. It is established that all indices of operation change in the course of a campaign: Length of heat (LH), thermal load (TL), unit fuel consumption, and temperature of air and gas checkers. The curve of variation in the LH during the course of a campaign has 3 characteristic regions; a well-defined minimum in the vicinity of heats 40 to 50 (the LH being 93-96% of the average for the campaign), a virtually flat region from the 80th to the 140th heat (LH being equal to the average for the

Card 1/3

SOV/137-58-7-14385

Output Rate and Thermal Regime of a Tilting Open Hearth (cont.)

campaign), and a sharp rise at the end of the campaign, exceeding the average LH by 10-15%. The working period shows little change in the course of the campaign, if we disregard the first 10 heats and the last at the end of the campaign. The length of the melting period changes sharply in accordance with the change in the LH during the campaign. In the course of a campaign the TL rises during all the periods of the heat, except for that prior to the 30th to 50th, during which time a steady reduction to a minimum of 19.5-20 million kcal/hr occurs. The TL rises by 6-7 million kcal/hr in the course of the campaign. The difference between the TL during the charging and heating period and the TL during the period of pure boil representing (approximately) the useful portion of the load undergoes a systematic decline during the campaign (from ~ the 40th to the 80th heats), and this testifies to the fact that the bath fails to receive a significant amount of heat, leading to an increase in the melting period and the LH. The nature of the change in the unit fuel consumption in the course of a campaign follows the trend of the changes in the LH, i.e., it is characterized by a minimum in the vicinity of the 40th heat, with a systematic increase toward the end of the campaign (with a minimum value of 130 kg/t to 180-200 kg/t). The highest gas-checker temperatures in the course of the campaign are those recorded approximately up to the 80th heat, followed by a continued drop from 1250 to 1000°C at the

Card 2/3



SOV/137-58-7-14385

Output Rate and Thermal Regime of a Tilting Open Hearth (cont.)

end of the campaign. The temperature of the air checkers at about the 120th-140th heats shows a maximum of 1125-1225<sup>o</sup>, dropping later to 1000<sup>o</sup>. Reduction of the difference between furnace-operation indices during the initial and terminal periods of a campaign requires careful maintenance of the furnace, primarily of the checker chambers, the slag pockets, and the gas ports, and adjustment of the TL during the campaign so that the useful TL remain at a constant and high level.

N.I.

1. Open hearth furnaces--Statistical analysis
- Operation
2. Open hearth furnaces

Card 3/3

**AUTHOR:** Leproskiy, V.V., Kapustin, E.A., Glinkov, G.M. and Slepkanov, P.N.

133-5-6/27

**TITLE:** On the comparison of tilting and fixed open hearth furnaces. (O sravnenii kachayushchikhsya i statsionarnykh martenovskikh pechey.)

**PERIODICAL:** "Stal'" (Steel), 1957, No. 5, pp. 411-413 (U.S.S.R.)

**ABSTRACT:** This paper is a comment on the paper by K.G. Trubin, "Stal'", 1956, No.9. The above subject is discussed in the light of the results of operating 250 ton tilting furnaces on the Azovstal' Works. For comparison with fixed furnaces the results obtained on the Zaporozhstal' Works are quoted. After indicating that the bottoms of tilting furnaces require more maintenance the authors compare the productivity of both types of furnaces. The dependence of the output per hour on the bottom surface (Fig. 1) and on furnace capacity (Fig.2) indicates that for furnaces of the same bottom area and the same capacity the productivity of fixed furnaces is better. Thermal efficiency of tilting and fixed furnaces is compared on the basis of heat losses and the extent of preheating of gas and air (Fig. 3). The stability of roof refractories in tilting furnaces is lower than in fixed ones; Azovstal' - 29 kg/ton of steel while on the Makeyevsk Works - 26 kg/ton. It is concluded that technical-economical indices of tilting

Card 1/2

KAPUSTIN X.Q.A

KHODAKOVSKIY, V.V.; YEFIMOV, V.A., kand. tekhn. nauk, starshiy nauchnyy rabotnik; KOSENKO, P.Ye., kand. tekhn. nauk; KAZAKEVICH, S.S.; LAPITSKIY, V.I., prof., doktor tekhn. nauk; FILIP'YEV, O.V.; STROGANOV, A.I., kand. tekhn. nauk, dots.; DEMIDOVICH, A.V.; BORNATSKIY, I.I., kand. tekhn. nauk; MEDZHIBOZHSKIY, M.Ya., dots.; KOCHO, V.S., prof., doktor tekhn. nauk; RYN'KOV, V.I.; LOMAKIN, I.M., mladshiy nauchnyy sotrudnik; KOKAREV, N.I., dots.; KLYUCHAREV, A.P.; PLYUSHCHENKO, Ye.A.; KAPUSTIN, Ye.A., kand. tekhn. nauk, dots.; KOBEZA, I.I., kand. tekhn. nauk, nauchnyy sotrudnik; SHIROKOV, G.I.; UMRIKHIN, P.V., prof., doktor tekhn. nauk; LEZHAVA, K.I.; ZHIGULIN, W.I.; MOROKOV, P.K.; KHLEBNIKOV, A.Ye., prof., doktor tekhn. nauk, starshiy nauchnyy sotrudnik; TARASOV, N.S.; NIKOLAYEV, A.G.

Discussions. Biul. TSNIICEM no.18/19:40-66 '57.

(MIRA 11:4)

1. Starshiy inzhener Glavspetsstali Ministerstva chernoy metallurgii SSSR (for Khodakovskiy).
2. Institut gaza (for Yefimov).
3. Direktor Dneprodzerzhinskogo metallurgicheskogo instituta (for Kosenko).
4. Nachal'nik laboratorii Leningradskogo instituta ogneuporov (for Kazakevich).
5. Zaveduyushchiy kafedroy metallurgii stali Dnepropetrovskogo metallurgicheskogo instituta (for Lapitskiy).
6. Nachal'nik laboratorii Giprostali (for Filip'yev).
7. Chelyabinskii politekhnicheskii institut (for Stroganov).
8. Nachal'nik teplotekhnicheskoy laboratorii Severakogo metallurgicheskogo zavoda (for Demidovich).
9. Zamestitel' nachal'nika TSentral'noy zavodskoy laboratorii Makeyevskogo metallurgicheskogo zavoda (for Bornatskiy).

(Continued on next card)

KHODAKOVSKIY, V.V.---(continued) Card 2.

10. Sibirskiy metallurgicheskiy institut (for Medzhibozhskiy).
11. Zaveduyushchiy kafedroy metallurgii stali Kiyevskogo politekhnicheskogo instituta (for Kocho). 12. Ispolnyayushchiy obyazannosti glavnogo inzhenera Beloretskogo metallurgicheskogo kombinata (for Ryn'kov). 13. Vsesoyuznyy nauchno-issledovatel'skiy institut metallurgicheskoy teplotekhniki (for Lomakin). 14. Ural'skiy politekhnicheskiiy institut (for Kokarev). 15. Zamestitel' nachal'nika teplotekhnicheskoy laboratorii Nizhne-Tagil'skogo metallurgicheskogo kombinata (for Klyucherov). 16. Nachal'nik teplotekhnicheskoy laboratorii Tsentral'noy zavodskoy laboratorii zavoda im. Voroshilova (for Plyushchenko). 17. Zhdanovskiy metallurgicheskiy institut (for Kapustin). 18. Institut metallurgii im. Baykova AN SSSR (for Kobeza). 19. Nachal'nik laboratorii martenovskikh pechey Vsesoyuznogo nauchno-issledovatel'skogo instituta metallurgicheskoy teplotekhniki (for Shirokov). 20. Zaveduyushchiy kafedroy metallurgii stali Ural'skogo politekhnicheskogo instituta (for Umrikhin). 21. Nachal'nik metallurgicheskoy laboratorii Tsentral'noy zavodskoy laboratorii Zakavkazskogo metallurgicheskogo zavoda (for Iezhava). 22. Zamestitel' glavnogo inzhenera zavoda im. Petrovskogo (for Zhigulin). 23. Nachal'nik martenovskogo tsekha Kuznetskogo metallurgicheskogo kombinata (for Morokov). 24. Institut metallurgii im. Baykova AN SSSR (for Ehlebnikov). 25. Glavnyy inzhener Petrovsk-Zabaykal'skogo metallurgicheskogo zavoda (for Tarasov). 26. Nachal'nik tsekha Magnitogorskogo metallurgicheskogo kombinata (for Nikolayev).

(Open-hearth process)

SOV/137-58-10-20550

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 29 (USSR)

AUTHORS: Oyks, G.N., Kryakovskiy, Yu.V., Kapustin, Ye.A., *Cand Tech Sci*  
Grigor'yev, V.P.

TITLE: The Efficiency of Oxygen in Enriching the Blow in Conversion  
of High-phosphorus Pig Iron in Open Hearths (Effektivnost'  
primeneniya kislороda dlya obogashcheniya vozdukha pri pere-  
dele vysokofosforistogo chuguna v martenovskikh pechakh)

PERIODICAL: Sb. Mosk. in-t stali, 1957, Vol 37, pp 152-165

ABSTRACT: O<sub>2</sub> is delivered through water-cooled tuyeres and at an angle  
of 12-13° into the flame jet of the 350 t furnaces at the Azovstal'  
Plant. Analysis of data as to the efficiency of the effect of en-  
riched air at various thermal loads shows that enrichment of  
the air up to 27% during charging and melting down and up to  
25% during hot-metal addition and melting makes it possible to  
shorten the melt by 44 min. An increase in the heat input (at  
identical degrees of enrichment of the air) to 32 mill. kcal/hr  
reduces the melt by 1 hr. 20 min. Subsequent increase in the  
heat input reduces the time saving apparently due to overheating  
of the charge. In determining the efficiency of O<sub>2</sub> it is

Card 1/2

*Chair Metallurgy of Steel, Moscow Inst of Steel and Iron I.V. Stalin*

SOV/137-58-10-20550

The Efficiency of Oxygen in Enriching the Blow (cont.)

found that rates of delivery up to 500 m<sup>3</sup>/hr do not shorten the melt. An increase in O<sub>2</sub> consumption of up to 2500 m<sup>3</sup>/hr induces reduction in melt time. The consumption of fuel, in conventional units, is reduced, and the unit consumption of O<sub>2</sub> is increased. At another percentage of oxygen, the maximum efficiency is attained by the use of O<sub>2</sub> during the periods of charging, melting down, and hot-metal addition, when there is a considerable temperature drop between the loaded charge and the flame. In all variants, reduction in melt time is primarily in the melt-down and working periods, as the other periods undergo little change. It is emphasized that the maximum possible and the optimum values for enrichment of the air have not been found, and these are most important for the charging and melting-down periods. Delivery of O<sub>2</sub> into the flame speeds the heating and melting down of the charge, and makes for more rapid processes of slag formation and dephosphorization.

1. Iron--Production effects      2. Open hearth furnace--Operation      3. Oxygen--Thermal effects

Ye.T.

Card 2/2

SOV/137-58-9-18569

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 56 (USSR)

AUTHORS: ~~Kapustin, V. A.~~ <sup>Cand Tech Sci, Lect.</sup> Makovskiy, V. A., Glinkov, G. M.

TITLE: The Role of Oxygen-enriched Flame in Oxidation Processes of Open-hearth Smelting (Rol' obogashchennogo kislorodom fakela v okislitel'nykh protsessakh martenovskoy plavki)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya, 1958, Nr 2, pp 84-92

ABSTRACT: An experimental campaign carried out in a 370-ton open-hearth furnace of the "Azovstal'" plant has shown that increased consumption of  $O_2$  in the flame increases the oxidation capacity of the furnace, the oxidation capacity being defined as the passage of  $O_2$  into the molten metal per unit of time. It was noted that the boundary of the visible brightly luminous flame is sharply reduced when  $O_2$  is introduced. Thus, at an  $O_2$  consumption of  $2500 \text{ m}^3/\text{hr}$ , the length of the flame is reduced to one-half of the length of the hearth. Gas samples taken along the length of the hearth revealed that uncombusted components ( $CO$ ,  $H_2$ ) are found only within the boundaries of the visible flame. At high rates of fuel

Card 1/2

*Zhdanov Metallurgical Institute*

SOV/137-58-9-18569

The Role of Oxygen-enriched Flame (cont.)

combustion and during frequent reversals (8-12 minutes), smaller quantities of combustible constituents are found in the central section of the furnace, and it is for this reason that the gaseous phase attains its maximum oxidizing capacity in this area. The flame exhibits a maximum temperature near the first charge opening and a minimum temperature in the vicinity of the fifth opening (the temperature drop may be as great as 150-250°C). Analyses of the slag have indicated that the greatest content of Fe in the slag is found in the center of the furnace, in the vicinity of the nozzles, where conditions are favorable for the passing of Fe into the slag; this conclusion was fully substantiated by experiment. The thermal balance of the smelting process is very favorably affected when a portion of the oxygen of the ore or of the cinder is replaced by atmospheric oxygen. Thus, every ton of O<sub>2</sub> absorbed from the furnace atmosphere reduces the amount of heat required for preheating and fusion by approximately 5 million kcal.

1. Open hearth furnaces--Performance
2. Fuels--Combustion
3. Oxygen--Performance
4. Slags--Analysis

Yu. N.

Card 2/2



KAPUSTIN, YE. A.

133-58-3-9/29

AUTHORS: Glinkov, G.M., Kapustin, Ye.A., and Makovskiy, v.A.

TITLE: The Temperature of the Combustion Products at the Outlet from the Working Space of a Tilting Open-hearth Furnace (Temperatura produktov goreniya na vykhode iz rabochego prostranstva kachayushcheyssya martenovskoy pechi)

PERIODICAL: Stal', 1958, nr 3, pp 223 - 224 (USSR)

ABSTRACT: The paper is a contribution to a similar paper (Ref.1) on the same subject in respect of fixed open-hearth furnaces. The temperature of the waste gas (thermocouple) at the outlet and the temperature of the internal surface of the vertical flue (optical pyrometer) were measured on one of the 350-ton open-hearth furnaces of the Azovstal' Works. The results obtained are shown in diagrams, Figs.1-5. Conclusions: 1) The temperature of the waste gas at the outlet from the working space of a tilting furnace is higher than the roof temperature and is on average during a heat 1 620 - 1 650 °C. 2) The temperature of waste gas in vertical flues is 60 - 80 °C lower than that on fixed furnaces which decreases the efficiency of pre-heating air and the economy of the furnace operation. The possibility of a continuous measurement of the waste gas temperature on the rate of its increase using a radiation pyrometer was established. There are 5 figures and 2 Soviet references.

Card1/2

The Temperature of the Combustion Products at the Outlet from the  
Working Space of a Tilting Open-hearth Furnace 133-58-3-9/29

ASSOCIATION: Zhdanovskiy metallurgicheskiy institut and  
Zavod "Azovstal'" (Zhdanov Metallurgical Institute  
and "Azovstal'" Works)

AVAILABLE: Library of Congress

Card 2/2

AUTHORS: Kapustin, Ye.A., Candidate of Technical Sciences, SOV/133-58-10-29/31  
Makovskiy, V.A. and Karpov, G.D., Engineers

TITLE: Ageing and Thermal Load of an Open-hearth Furnace  
(Stareniye i teplovaya nagruzka martenovskoy pechi)

PERIODICAL: Stal', 1958, Nr 10, pp 952 - 956 (USSR)

ABSTRACT: Changes in the thermal operating conditions of an open-hearth furnace in the course of its campaign are discussed on the basis of data on the operation of 350-ton tilting furnaces in the "Azovstal'" Works. In view of difficulties of the evaluation of slow changes in the operation of an open-hearth furnace in the course of a campaign (on "ageing") two indices are proposed - "thermal load of idle running" and "active thermal load". From the value of heat consumption during idle running during the individual periods of a campaign, the economy of the furnace operation and the value of the active thermal load (the difference between the absolute thermal load during a given melting period and the load of idle running) can be evaluated. Changes in the thermal load of idle running can be determined from changes in the thermal load during bottom repairs and during the periods of pure

Card1/2

Ageing and Thermal Load of an Open-hearth Furnace SOV/133-58-10-29/31

boiling and deoxidation. As the thermal work of an open-hearth furnace in the course of a campaign is continuously changing when establishing thermal operating conditions, it is necessary to take into consideration thermal load during idle running. There are 8 figures

ASSOCIATIONS: (Zhdanov Metallurgical Institute)  
Zhdanovskiy metallurgicheskiy institut  
and Zavod "Azovstal'" ("Azovstal'" Works)

Card 2/2

18(5)

**AUTHORS:**

Kapustin, Ye.A., Glinkov, G.M., Candidates of Technical Sciences and Kaluzhskiy, Ye.A., Engineer

SOV/148-59-1-9/19

**TITLE:**

Raising the Productivity and Economy of Open Hearth Furnace by Improving the Thermal Process (Povysheniye proizvoditel'nosti i ekonomichnosti martenovskoy pechi za schët usovershenstvovaniya teplovogo rezhima)

**PERIODICAL:**

Izvestiya vysshikh uchebnykh zavedeniy - Chernaya metallurgiya, 1959, Nr 1, pp 83-89 (USSR)

**ABSTRACT:**

Experiments were carried out for the purpose of developing an improved heat process in open hearth furnaces, whereby optimum correlation of blast air and mazut consumption during the smelt were determined. The following personalities participated in the work: A.A. Goshchanskiy, V.I. Dorokhov, V.P. Yevtyukhov, D.P. Zabrodin, V.F. Kalinkin, A.Ye. Prikhozhenko, V.D. Rudman, A.A. Rykhlikova, N.G. Stepin, I.S. Chernyshev. It was stated that the determination of the blast expense depended on the components of air balance such as: air expense for fuel burning, oxidation of the pool, burning-out of CO, as well as loss of air caused by leakages and air intake from the external space.

Card 1/2

SOV/148-59-1-9/19

Raising the Productivity and Economy of Open Hearth Furnace by Improving the Thermal Process

Air intake and loss depended on the pressure in the smelting space. For the case that optimum pressure under the smelting space coupola could not be maintained, the blast expense must be adjusted accordingly. The developed thermal process regulates the thermal load depending on the charge material (loose or scrap); the quality of the scrap; duration of initial heating and idle time; and the smelting intensity. The new method reduced the smelting time by 6.4% and the specific fuel expense by 8.3%. The author presents graphs where the mazut expense is plotted versus the smelting time; the quantity of beads and the Fe-content in the slag; etc. There are 8 graphs and 6 Soviet references.

ASSOCIATION: Zhdanovskiy metallurgicheskiy institut (Zhdanov Metallurgical Institute)  
SUBMITTED: October 1, 1958

Card 2/2

LEPORSKIY, Vladimir Vladimirovich; KAPUSTIN, Yevgeniy Aleksandrovich;  
GLINKOV, German Markovich; MAKOVSKIY, Vitaliy Anatol'yevich;  
LEBEDEV, A.I., red.; LANOVSAYA, M.R., red. izd-va; DOBUZHIN-  
SKAYA, L.V., tekhn.red.

[Tilting open-hearth furnaces; design and heat transfer] Ka-  
chaisushohaiasia martenovskaya pech'; konstruktsiya i teplovaya  
rabota. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i  
tsvetnoi metallurgii, 1961. 181 p. (MIRA 14:5)  
(Open-hearth furnaces--Design and construction)  
(Heat--Transmission)

KAPUSTIN, Ye. A.

85

PHASE I BOOK EXPLOITATION

BOV/5556

Moscow. Institut stali.

Novoye v teorii i praktike proizvodstva martenovskoy stali (New [Developments] in the Theory and Practice of Open-Hearth Steelmaking) Moscow, Metallurgizdat, 1961. 439 p. (Series: Trudy Mezvuzovskogo nauchnogo soveshchaniya) 2,150 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy institut stali imeni I. V. Stalina.

Eds.: M. A. Glinkov, Professor, Doctor of Technical Sciences, V. V. Kondakov, Professor, Doctor of Technical Sciences, V. A. Kudrin, Docent, Candidate of Technical Sciences, G. N. Oyka, Professor, Doctor of Technical Sciences, and V. I. Yavovskiy, Professor, Doctor of Technical Sciences; Ed.: Ye. A. Borko; Ed. of Publishing House: N. D. Gromov; Tech. Ed.: A. I. Karasev.

PURPOSE: This collection of articles is intended for members of scientific institutions, faculty members of schools of higher education, engineers concerned with metallurgical processes and physical chemistry, and students specializing in these fields.

Card 1/14



New [Developments] in the Theory (Cont.)

80V/5556

COVERAGE: The collection contains papers reviewing the development of open-hearth steelmaking theory and practice. The papers, written by staff members of schools of higher education, scientific research institutes, and main laboratories of metallurgical plants, were presented and discussed at the Scientific Conference of Schools of Higher Education. The following topics are considered: the kinetics and mechanism of carbon oxidation; the process of slag formation in open-hearth furnaces using in the charge either ore-lime briquets or composite flux (the product of calcining the mixture of lime with bauxite); the behavior of hydrogen in the open-hearth bath; metal demulfurization processes; the control of the open-hearth thermal melting regime and its automation; heat-engineering problems in large-capacity furnaces; aerodynamic properties of fuel gases and their flow in the furnace combustion chamber; and the improvement of high-alloy steel quality through the utilization of vacuum and natural gases. The following persons took part in the discussion of the papers at the Conference: S.I. Filippov, V.A. Kudrin, M.A. Glinkov, R.P. Nam, V.I. Yavovskiy, G.N. Oyks and Ye. V. Chelishchev (Moscow Steel Institute); Ye. A. Kazachkov and A. S. Kharitonov (Zhdanov Metallurgical Institute); H.S. Mikhaylets (Institute of Chemical Metallurgy of the Siberian Branch of the Academy of Sciences USSR); A.I. Stroganov and D. Ya. Povolotskiy (Chelyabinsk Polytechnic Institute); P.V. Umrikhin (Ural Polytechnic Institute); I.I. Pomin (the Moscow "Serp i molot" Metallurgical Plant); V.A. Fuklev (Central Asian Polytechnic Institute).

Card 2/14

New [Developments] in the Theory (Cont.)

80V/5556

and M.I. Beylinov (Night School of the Dneprodzerzhinsk Metallurgical Institute).  
References follow some of the articles. There are 268 references, mostly Soviet.

TABLE OF CONTENTS:

Foreword

5

Yavovskiy, V. I. [Moskovskiy institut stal - Moscow Steel Institute].  
Principal Trends in the Development of Scientific Research in Steel  
Manufacturing

7

Filippov, S. I. [Professor, Doctor of Technical Sciences, Moscow Steel  
Institute]. Regularity Patterns of the Kinetics of Carbon Oxidation  
in Metals With Low Carbon Content

15

[V. I. Antonenko participated in the experiments]

Levin, S. L. [Professor, Doctor of Technical Sciences, Dnepropetrovskiy  
metallurgicheskiy institut - Dnepropetrovsk Metallurgical Institute].

Card 3/14

New [Developments] in the Theory (Cont.)

807/5556

20

Kapustin, Ye. A. [Docent, Candidate of Technical Sciences, Zhdanov Metallurgical Institute]. Aerodynamic Properties of Fuel Gases and Their Flow in the Combustion Chamber of an Open-Hearth Furnace

271

Kudrin, V.A. [Docent, Candidate of Technical Sciences], G.N. Oyks, O.D. Petrenko, A.A. Yudson, Yu. M. Nechkin, B.P. Nam, [Engineers], I.I. Ansheles [Docent, Candidate of Technical Sciences], R.M. Ivanov [Candidate of Technical Sciences], and V.P. Adrianova [Engineer]. Special Features of Making High-Quality Steel in Natural-Gas-Fired Open-Hearth Furnaces

280

Butakov, D.K. [Docent], L.M. Mel'nikov [Engineer], A.M. Lirman, V.D. Budenny, P.P. Babich, and A.I. Sinkovich [Ural Polytechnic Institute, Zavod im. Ordzhonikidze Chelyabinskogo sovmarkhoza - Plant imeni Ordzhonikidze of the Chelyabinsk Sovmarkhoz]. Special Features of Making Steel in Open-Hearth Furnaces With Magnesite-Chromite [Brick] Roofs

290

Kudrin, V.A., Yu. M. Nechkin, Ye. I. Tyurin [Candidate of Technical Sciences], and Ye. V. Abrosimov [Moscow Steel Institute]. The Acid Open-Hearth Process

299

Card 10/14

S/124/62/000/001/015/046  
D237/D304

AUTHOR: Kapustin, Ye. A.

TITLE: Aerodynamic properties of fuel and motion of gases within an open-hearth furnace

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1962, 35-36, abstract 1B241 (Sb. Novoye v teorii i praktike proiz-va martenovsk. stali. M., Metallurgizdat, 1961, 271-279, Discussion 232-334)

TEXT: At temperatures dangerous for the furnace-charging team, forcing heat transfer processes is possible only in the presence of a directionally controlled heat transfer, the control being achieved by appropriate monitoring of the flow of gases. The work gives a survey of aerodynamic properties of various fuels (black oil, natural gas, etc.) and of various motion accelerators (compressed air, water vapor, oxygen, etc.). Investi-

Card 1/2

Aerodynamic properties of...

S/124/62/000/001/015/046  
D237/D304

gated also is the influence of the motion of gas streams within the furnace on heat-transfer processes. From the experimental and theoretical data available, it is shown that there exist great possibilities for the speeding-up of the transfer of oxygen from the gaseous phase into the tank by increasing the velocity of gas motion and by concentration of oxygen in the stream above the tank. [Abstracter's note: Complete translation.] ✓

Card 2/2

GLINKOV, G.M.; KALOSHIN, N.A.; KAPUSTIN, Ye.A.; KARPOV, G.D.; RUDMAN, V.D.;  
KHIISH, L.I.

Results of modeling open-hearth furnaces fired by cold high-calorie  
gas and hot mixed gas. Izv. vys. ucheb. zav.; chern. met. no.2:  
138-147 '61. (MIRA 14:11)

1. Zhdanovskiy metallurgicheskiy institut.  
(Open-hearth furnaces--Models)  
(Gas flow--Models)

KAPUSTIN, Yevgeniy Aleksandrovich; GLINKOV, German Markovich; MITKALINNY, V.I., dots., retsenzents; GOLYATKINA, A.G., red.izd-va; KARASEV, A.I., tekhn.red.

[Flow of gases in open-hearth furnaces] Dvizhenie gazov v martenovskikh pechakh. Moskva, Metallurgizdat, 1963. 270 p.  
(MIRA 16:4)

(Open-hearth furnaces) (Gas flow)

KAPUSTIN, Ye.A.; KALOSHIN, N.A.; RUDMAN, V.D.; LEPORSKIY, V.V.

'Self-carburation of natural gas with the use of oxygen. Stal' 23  
no.5:420-421 My '63. (MIRA 16:5)

1. Zhdanovskiy metallurgicheskiy institut i Azovskiy staleplavil'nyy zavod im. Sergo Ordzhonikidze v Zhdanove.  
(Gas, Natural)



KAPUSTIN, Y. A.

MLK

Corresponding member, Academy of Sciences

Steel production, open-hearth, quality control, refractory  
tables. Errata slip inserted. 5,000 copies printed.

TOPIC TAGS: steel, open-hearth furnace, quality control, refractory

TABLE OF CONTENTS [abridged]:<sup>18</sup>

Part 8. Thermal engineering

Ch. XV. Fuel and its combustion in an open-hearth furnace (N. I. Ivanov) -- 535

Ch. XVI. Mechanics of furnace gases in open-hearth furnaces (Glinkov) -- 554

Ch. XVII. Heat transfer in an open-hearth furnace (S. S. Maglitskiy)

Ch. XVIII. Thermal operation of an open-hearth furnace (Ye. A. Kapustin) -- 603

Ch. XIX. Auxiliary thermal equipment in steel production (B. G. Topolov)

Card 1/3<sup>617</sup>

L 17595-65

ACCESSION NR AM4046730

Part 9. Thermal processes

Ch. XX. Automatic control and regulation of thermal processes in steel production (A. P. Kopelovich, A. P. Sinchuk, and M. A. L'vov) -- 630

Ch. XXI. Evaporative cooling of open-hearth furnaces (S. M. Andon'yev) -- 720

Ch. XXII. Hot cooling of open-hearth furnaces (A. I. Tvardovskiy)

Ch. XXIII. Heating of open-hearth furnaces (A. I. Tvardovskiy)

Ch. XXIV. Heating of open-hearth converter gases (A. I. Tvardovskiy)

Ch. XXV. Heating of open-hearth converter gases with compressed air

Ch. XXVI. Supplying steelmaking shops with oil (A. I. Tvardovskiy)

Part III. Mechanical properties, control and testing

Ch. XXVII. Chemical analysis (r. Ia. Iakovlev) -- 010

Ch. XXVIII. Spectral analysis (N. N. Sorckina) -- 840

Ch. XXIX. Melting and delivered quality control of steel (M. I. Sorokina)

Ch. XXX. Mechanical testing of metals (G. Timoshenko)

Ch. XXXI. Analysis of metals in metals and alloys (I. Timoshenko)

Ch. XXXII. Determining nonmetallic inclusions and cart. ex

Card 2/3

L 17595-65  
ACCESSION NR AM4046730

Ch. XXXIII. Defectoscopy (V. S. Tokmakov) -- 910  
Ch. XXXIV. Use of radioactive isotopes to study the processes of steel production -- 924  
Part 11. Design  
Ch. XXXV. Design of steelmaking shops (G. A. Garbuz and D. T. Martsinkovskiy) -- 932  
Part 12. Economics  
Ch. XXXVI. Technical-economic indicators of steel production (G. V. Vitin and A. G. Lifshits) -- 956  
Part 13. Transportation, refractories, oxygen, classification and characteristics of steels  
Ch. XXXVII. Transportation (S. S. Berlyand) -- 980  
Ch. XXXVIII. Refractories (M. A. Lur'ye) -- 993  
Ch. XXXIX. Oxygen (D. L. Glizmanenko) -- 1009  
Ch. XL. Classification and characteristics of steels (N. V. Matyash) -- 1010

SUB CODE: MM  
OTHER: 030

SUBMITTED: 30May64

NR FEB 1965

Cord 3/3

YAVOYSKIY, V.I., otv. red.; BIGEYEV, A.M., red.; BORKO, Ye.A., red.; GLINKOV, M.A., red.; ZARVIN, Ye.Ya., red.; KAPUSTIN, Ye.A., red.; KOCHO, V.S., red.; KUDRIN, V.A., red.; LAPITSKIY, V.I., red.; LEVIN, S.L., red.; OYKS, G.N., red.; ROMENETS, V.A., red.; UMRIKHIN, P.V., red.; FILIPPOV, S.I., red.

[Theory and practice of the intensification of processes in converters and open-hearth furnaces; transactions]  
Teoriia i praktika intensifikatsii protsessov v konferte-  
rakh i martenovskikh pechakh; trudy. Moskva, Metallurgiya,  
1965. 552p. (MIRA 18:10)

1. Mezhvuzovskoye nauchnoye soveshchaniye po teorii i praktike intensifikatsii protsessov v konverterakh i martenovskikh pechakh. 2. Moskovskiy institut stali i splavov (for Filippov). 3. Zhdanovskiy metallurgicheskiy institut (for Kapustin). 4. Ural'skiy politekhnicheskiy institut (for Umrikhin).

KAPUSTIN, Ye.A., kand. tekhn. nauk; KALINKIN, V.F.; KAMENEV, Yu.S.

Heating open-hearth steel during the maximum boiling period.  
Met. i gornorud. prom. no.1:30-31 Ja-F '65. (MIRA 18:3)

KAPUSTIN, Ye. I.

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1. Zhdanovskiy metallurgicheskiy institut.

KAPUSTIN, Ye.A.

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ucheb. zav.; chern. met. 8 no.9:192-194 '65. (MIRA 18:9)

1. Zhdanovskiy metallurgicheskiy institut.

KAZANTSEV, I.G.; KAPUSTIN, Ye.A.; RUDMAN, V.D.

Determining the coefficient of mass transfer between the  
gaseous phase and the bath of an open-hearth furnace. Izv.  
vys. ucheb. zav.; chern. met. 8 no.11:44-47 '65.

(MIRA 18:11)

1. Zhdanovskiy metallurgicheskiy institut.



KAPUSTIN, YE I ed.

Spravochnyye materialy po trudu i zarabotnoy plate. Moskva, 1960.

238 / 1 / p.

At head of title: Moscow. Nauchno-issledovatel'skiy Institut Truda, and  
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KAPUSTIN, Yevgeniy Ivanovich, kandidat ekonomicheskikh nauk; ANDRONOV, I.I.,  
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[Wages in a socialist society] Zarabotnaya plata v sotsialisticheskom  
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riia 2, no.8). (MIRA 8:5)  
(Wages)

KAPUSTIN, Yevgeniy Ivanovich, kand. ekon. nauk; FALALYEVA, T.F., red.;  
BERLOV, A.P., tekhn. red.

[Economic law of distribution according to labor, and wages under  
socialism] Ekonomicheskii zakon raspredelenia po trudu i zarabot-  
naia plata pri sotsializme. Moskva, Izd-vo "Znanie," 1958. 39 p.  
(Vsesoiuznoe obshchestvo po rasprostraneniui politicheskikh i  
nauchnykh znani. Ser.3, no.21). (MIRA 11:10)  
(Wages) (Economics)

KAPUSTIN, Ye.I., red.; SMIRNOVA, K.V., red.; SHIKIN, S.T., tekhn. red.

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trudu i zarabotnoi plate. Pod red. E.I.Kapustina, Moskva, 1960.  
238 p. (MIRA 14:11)

1. Moscow. Nauchno-issledovatel'skiy institut truda.  
(Labor and laboring classes—Handbooks and manuals)  
(Wages—Handbooks and manuals)

VASHENTSEVA, V.M.; VOLKOV, M.I.; ZHAMIN, V.A.; ZHUKOV, F.G.; CHUBUK, I.F.;  
KAPUSTIN, Ye.I.; KOZLOVA, N.G.; KOROCHKIN, V.V.; KUL'KOV, A.V.;  
MARINKO, I.L.; MOLCHALOV, B.M.; ROMANOV, B.V.; FEDOROV, V.I.;  
SHIRINSKIY, I.D.; GRINGAUZ, A., red.; SHLYK, M., tekhn. red.

[How to study the economics of socialism] Kak izuchat' politiches-  
skuiu ekonomiiu sotsializma; posobie dlia rukovoditelei seminarov  
sistemy partinogo prosveshcheniia. Moskva, Mosk. rabochii, 1961.  
239 p. (MIRA 14:8)

1. Dom politicheskogo prosveshcheniya, Moscow,  
(Economics—Study and teaching)

KAPUSTIN, Ye.I., kand. ekonom. nauk; ORLOVSKIY, I.A.; SHKURKO, S.I.;  
BUDARINA, V., red.; KIRSANOVA, I., mladshiy red.; CHEPELEVA, O.,  
tekhn. red.

[Wages and their improvement in U.S.S.R. industry] Zarabotnaya  
plata v promyshlennosti SSSR i ee sovershenstvovanie. Pod red.  
E.I.Kapustina. Moskva, Izd-vo sotsial'no-ekon. lit-ry, 1961. 201 p.  
(MIRA 15:3)

1. Moscow. Nauchno-issledovatel'skiy institut truda.  
(Wage payment systems)

KAPUSTIN, Yevgenij Ivanovic [Kapustin, Yevgeniy Ivanovich]

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10 no.2:82-89 F '62.

1. Namestek reditele Vedeckoyy ~~akumsho~~ ustavu prace, Moskva.

KAPUSTIN, Yevgeniy Ivanovich; BUDARINA, V., red.

[Quality of labor and wages] Kachestvo truda i zarabot-  
naya plata. Moskva, Mysl', 1964. 332 p.

(NIRA 18:1)



KASIMOVSKIY, Ye.V.; HRAGINSKIY, B.I.; BUKHANEVICH, B.A.; MANEVICH,  
Ye.L.; SHKURKO, S.I.; KAPUSTIN, Ye.I.; MAYYER, V.F.;  
MIL'NER, G.V.; GOTLOBER, V.M.; CHUFAROVA, G.P.;  
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V.V., red.

[Problems of labor economics] Problemy ekonomiki truda. Mo-  
skva, Ekonomika, 1965. 309 p. (MIRA 18:8)

BASSINA, M.; KAPUSTIN, Yu.; PELIPEY, V.; VASILENKO, A.

For the prize offered by "Radio" magazine. Radio no.11:15-16  
# '56. (MLRA 9:12)

1. Nachal'nik kollektivnoy radiostantsii L'vovskogo radiokluba  
(for Bassina). 2. Nachal'nik kollektivnoy radiostantsii kluba  
UA3KWA (for Kapustin). 3. Nachal'nik Zaporozhskogo radiokluba  
(for Pelihey).

(Radio--Competitions)

Announcement

KAPUSTIN, Yu.

Shortwave radio competition for women. Radio no.10:9 0 '57.

(MIRA 10:10)

1. Nachal'nik radiostantsii Kaluzhskogo radiokluba.

(Radio, Shortwave--Competitions)

BORODIN, L.S.; KAPUSTIN, Yu.L.

First find of burbankite in the U.S.S.R. Dokl. AN SSSR  
147 no.2:462-465 N '62. (MIRA 15:11)

1. Institut mineralogii, geokhimii i kristalloghimii  
redkikh elementov. Predstavleno akademikom D.I. Shcherbakovym.  
(Burbankite)

KAPUSTIN, Yu.L.

Zircosulfate, a new mineral. Zap.Vses.min.ob-va 94  
no.5:530-533 '65. (MIRA 18:11)

1. Institut mineralogii, geokhimii i kristallokhimii redkikh  
elementov Gosudarstvennogo geologicheskogo komiteta SSSR,  
Moskva.

KAPUSTIN, Yu.L.

First find of norsetite in the U.S.S.R. Dokl. AN SSSR 161 no.4:  
922-924 Ap '65. (MIRA 18:5)

1. Institut mineralogii, geokhimii i kristalloghimii redkikh  
elementov AN SSSR. Submitted November 9, 1964.

KAPUSTIN, Yu.L.

New find of wadeite in the Soviet Union. Dokl. AN SSSR 151 no.6:  
1410-1412 Ag '63. (MIRA 16:10)

1. Institut mineralogii, geokhimii i kristallokhimii redkikh  
elementov. Predstavleno akademikom D.S.Korzhinskim.

KAPUSTIN, Yu.L.; BYKOVA, A.V.

First find of hiordahlite in the U.S.S.R. Dokl. AN SSSR 161 no.3:683-  
686 Mr '65. (MIRA 18:4)

1. Institut mineralogii, geokhimii i kristalloghimii redkikh  
elementov AN SSSR. Submitted November 12, 1964.



KAPUSTIN, Yu.L.

Geological and petrographical characteristics and mineralo-  
gical composition of carbonatites in the Vuoriyarvi Massif.  
Krat. soob. IMGRE no.1:111-113 '60. (MIRA 17:3)

KAPUSTINA, H.I.

DUBOVIKOVA, Yu.A.; MARCHENKO, V.I.; LEUKHINA, L.G.; KAPUSTINA, A.I.

Late reactions in children to injections of adsorbed purified  
diphtheria toxin. Zhur.mikrobiol.epid. i immun. 29 no.3:39-43 Nr '58.  
(MIRA 11:4)

1. Iz Moskovskogo instituta vaktsin i syvorotok imeni Mechnikova.  
(DIPHTHERIA, immunology,  
remote reactions to adsorbed purified toxin in child (Rus)

S/137/62/000/003/171/191  
A160/A101

AUTHOR: Kapustina, A. I.

TITLE: Application of alkaline method for decomposition of rocks, for  
determination of beryllium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, 1962, no. 3, 1, abstract 3 K 1  
("Khim., fiz.-khim. i spektr. metody issled. rud redk. i rasseyan.  
elementov", Moscow, Gosgeoltekhizdat, 1961, 61 - 62)

TEXT: The paper suggests to decompose rock which contain Be by fusing  
them together with NaOH in Pt crucibles. Presence of tourmaline together with  
minerals containing F, made it possible to obviate removal of F. 0.25 - 0.5 g  
material is molten together with 5 - 6 g NaOH in a Pt crucible, at 750 - 800°C.  
Melt is leached with hot water, is supplemented with 40 ml of concentrated HCl,  
heated until clarification and evaporated to dryness. The remaining material  
is supplemented with 15 - 20 ml HCl, diluted with hot water and filtered with  
H<sub>2</sub>SiO<sub>3</sub>. The filtrate is diluted with water up to 150 - 200 ml and precipitate  
Be on Ti phosphate (BWHC[VIMS] method). Next day the precipitate is filtered off,

Card 1/2

Application of alkaline method ....

S/137/62/000/003/171/191  
A160/A101

washed from the filter into a glass previously used for the precipitation, and is supplemented with 10 ml of a 10 % NaOH solution, then it is boiled down to 10 - 15 ml and transferred into a 100-ml flask which is then filled with water up to mark. Next day this solution is filtered through a filter, treated with  $\text{Na}_2\text{CO}_3$  and the aliquot portion of the filtrate is analyzed by colorimetric means with quinalizarine in a photo-colorimeter, using a red light filter. Investigation of  $\text{H}_2\text{SiO}_3$  precipitate for Be showed negative results. When analyzing ores containing minerals which can not be completely decomposed by fusing them together with alkali, the batch must be supplemented with 5 - 6 g NaOH and 1.5 g  $\text{Na}_2\text{O}_2$ ; the fusion is carried-out in a Pt crucible in a muffle furnace at a temperature at which melt has a cherry color. Then the melt is leached-out with water, supplemented with 40 ml of concentrated HCl and  $\text{H}_2\text{SiO}_3$  is separated-off by evaporation to dryness. The obtained solution is filtered into a 250 - 500 ml retort and Be is precipitated out of the aliquote portion 100 - 200 ml, with the aid of phosphate. Results obtained through the described decomposition coincide with those obtained by fusing the sample together with  $\text{KHF}_2$ . This method makes it possible to obviate the use of Pt for determining Be in pegmatites.

N. Gertseva

[Abstracter's note: Complete translation]  
Card 2/2

GOL'DBERG, K.M.; GEL'FANDEYN, N.M.; Prinimali uchastiye: BARIL'OTI,  
A.S.; KAPUSTINA, A.I.; LINKOVA, L.M.; STRUKOVA, V.A.; SERKOVA,  
L.V.; FRADKINA, TS.Ye.

Anticorrosive alkyd GF-020 priming. Lakokras.mat.i ikh prim.  
no.2:71-74 '62. (MIRA 15:5)

1. Khar'kovskiy lakokrasochnyy zavod "Krasnyy khimik".  
(Protective coatings)

KAPUSTINA, A.I.

Analyzing specimens in the determination of silicon and aluminum in  
products of the electrothermic production of fused silicon and aluminum.  
Trudy Vost.-Sib. fil. AN SSSR no.43:87-89 '62. (MIRA 16:3)  
(Aluminum—Electrometallurgy) (Silicon—Analysis)  
(Aluminum—Analysis)

KAPUSTINA, A.I.; KONSTANTINOVA, I.M.; MIKHEYEVA, Z.I.

Trilonometric determination of aluminum in fused silicon and aluminum during the electrometallurgy of aluminum. Trudy Vost.-Sib. fil. AN SSSR no.43:90-92 '62. (MIRA 16:3)

(Aluminum—Electrometallurgy)

(Aluminum—Analysis)

KAPUSTINA, A.M.; UCHASTKINA, Z.V.

Training technicians for the woodpulp and paper industry. Bum.  
prom. 34 no.1:23-24 Ja '59. (MIRA 12:1)  
(Paper industry)



KAPUSTINA, A. S.

472

## AUTHORS:

Abramov, V. S. and Kapustina, A. S.

## TITLE:

Reaction of Dialkylphosphorous Acids with Aldehydes and Ketones. Part 12. Esters of alpha-oxy-alpha-furfurylphosphinic and alpha-oxy-alpha-thenylphosphinic acids (O vzaimodeystvii dialkilfosforistykh kislot s al'degidami i ketonami. XII. Efiry alpha-oksi-alpha-furfurilfosfinovoy i alpha-oksi-alpha-tenilfosfinovoy kislot)

## PERIODICAL:

Zhurnal Obshchey Khimii, 1957, Vol. 27, No. 1, pp. 173-176 (U.S.S.R.)

## ABSTRACT:

This report describes the results obtained during the reaction of dialkylphosphorous acids with furfurole and alpha-thiophene aldehyde. It was established that furfurole and alpha-thiophene aldehyde with dialkylphosphorous acids can react either by the carbonyl group or by the double carbon/carbon bond and possibly also by the conjugated system of double bonds. Investigation showed that dialkylphosphorous acids react by the carbon/carbon bond yielding esters of alpha-oxyfurfurylphosphinic and alpha-oxy-alpha-thenylphosphinic acid with sulfur substituting for oxygen in the ring for thiophene aldehyde. The properties of the esters obtained are listed in Table 2. Data pertaining to the catalysts used in the condensation reactions are listed.

Card 1/2

KAPUSTINA, A.S.

P ④

Chemical Abst.  
Vol. 48 No. 5  
Mar. 10, 1954  
Organic Chemistry

Reaction of dialkyl phosphonate acids with aldehydes and ketones. IV. Butyl and allyl esters of  $\alpha$ -hydroxyalkylphosphonic acids. V. S. Abramov, R. V. Dmitrieva, and A. S. Kapustina (S. M. Kirov Chem. Technol. Inst., Kazan). *Zhur. Obshchei Khim.* 23, 251-62 (1953); cf. C.A. 47, 5351c.

—(RO)<sub>2</sub>POH with aldehydes and ketones in the presence of R'ONa yield addn. products of the general type (RO)<sub>2</sub>P(O)C(OH)R'R', as evidenced by heat evolution on mixing the ingredients. However, distn. of the reaction mixt. generally leads to decompn. and isolation of the starting materials; this is especially true for phosphites with large R units. (The text of the article is not clear, for statements concerning very ready isolation of the hydroxyphosphonates and the impossibility of their isolation are made side by side—G.M.K.) The reactions were run by adding a few drops of MeOH-MeONa to equimolar mixts. of di-Bu or diallyl phosphites and the desired carbonyl compd. and distg. the mixts. after brief standing and/or heating. The following were obtained (yield (%), b.p./mm.,  $d_{20}$ , and  $n_D^{20}$  given): (BuO)<sub>2</sub>P(O)CH(OH)Me, 56.7, 162-3°/9, 1.024, 1.4384; (BuO)<sub>2</sub>P(O)CH(OH)Pr, 49, 168-70°/6, 1.000, 1.4400; (BuO)<sub>2</sub>P(O)CH(OH)CH<sub>2</sub>CHMe<sub>2</sub>, —, 180-2°/11, 0.998, 1.4350; (BuO)<sub>2</sub>P(O)CH(OH)Ph, —, 168-70°/5, 1.020, 1.4680; (BuO)<sub>2</sub>P(O)CMe<sub>2</sub>OH, 59.2, 154-5°/7, 1.018, 1.4366; (BuO)<sub>2</sub>P(O)CMeOH, 57.7, 150-7°/8, 1.015, 1.4403; (BuO)<sub>2</sub>P(O)CMePhOH, 30, 179-80°/9, 1.025, 1.4670; (BuO)<sub>2</sub>P(O)CPh<sub>2</sub>OH, —, 207-9°/7, 1.030, 1.4700; (BuO)<sub>2</sub>P(O)C(OH)(CH<sub>3</sub>)<sub>2</sub>, 40.4, 179-80°/9, 1.049, 1.4549; (BuO)<sub>2</sub>P(O)C(OH)(CH<sub>3</sub>)<sub>2</sub>, 48.7, 178-80°/7, 1.039, 1.4570; (CH<sub>3</sub>:CH:CH<sub>2</sub>)<sub>2</sub>P(O)CHMeOH, 65.3, 151°/10, 1.1187, 1.4555; (CH<sub>3</sub>:CHCH<sub>2</sub>O)<sub>2</sub>P(O)CH(OH)Pr, 31.6, 163-4°/10, 1.0769, 1.4552; (CH<sub>3</sub>:CHCH<sub>2</sub>O)<sub>2</sub>P(O)CMeOH, 38.8, 172°/12, 1.0907, 1.4500; (CH<sub>3</sub>:CHCH<sub>2</sub>O)<sub>2</sub>P(O)C(OH)(CH<sub>3</sub>)<sub>2</sub>, 45.7, 165-7°/7, 1.1253, 1.4740; (CH<sub>3</sub>:CHCH<sub>2</sub>O)<sub>2</sub>P(O)C(OH)(CH<sub>3</sub>)<sub>2</sub>, 67.7, m. 50.5-7.0°. Addn. of few drops MeONa-MeOH to 9.7 g. (BuO)<sub>2</sub>POH and either 4.3 g. MePrCO, 4.3 g. Et<sub>3</sub>CO, or 9.1 g. (PhCH<sub>2</sub>)<sub>2</sub>CO gave a temp. rise to 37-18°;

(OVER.)

after being heated to 120-30°, the reaction mixts. on attempted distn. gave only the starting materials. Reaction with iso-BuCHO gave similar results. Diallyl phosphite and iso-BuCHO also gave only the starting materials, although the original mixt. appeared to react normally; BzH also failed to yield the desired ester with diallyl phosphite since during attempted distn. the mass decompd. at 170°, yielding a foamy solid; only starting products were obtained from diallyl phosphite and either EtEtCO or AcPh. (BuO)<sub>3</sub>POH with Et 2-oxocyclopentane carboxylate (in the presence of MeONa) gave, after unstated period at 140-80°, only small amts. of the starting materials and much tar.

G. M. Kosolapoff

MF  
-14-54

*KAPUSTINA, A. S.*  
USSR/Chemistry - Reaction processes

Card 1/1 Pub. 151 - 24/38

Authors : Abramov, V. S., and Kapustina, A. S.

Title : Reaction of dialkylphosphorous acids with aldehydes and ketones. Part 7.-  
Esters of alpha-hydroxy-(6-quinolyl)-methylphosphinic acid

Periodical : Zhur. ob. khim. 24/2, 311-314, Feb 1954

Abstract : The reaction of dialkylphosphorous acids with 6-quinoline-aldehyde was investigated. The derivation of seven new esters of alpha-hydroxy-(6-quinolyl)-methylphosphinic acid, separated from the reaction products in form of picrates is described. The properties of these esters are tabulated. The derivation of isopropyl ester of alpha-hydroxy-(6-quinolyl)-methylphosphinic acid, in form of colorless crystals with 119-120° melting point, is reported. Two USSR references (1950 and 1953). Tables.

Institution : The S. M. Kirov Chemical-Technological Institute, Kazan

Submitted : June 27, 1953

KAPUSTINA, A. S.

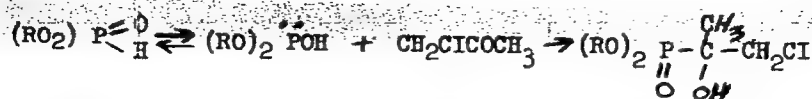
"Esters of Alpha-Oxy-beta-chloro-iso-propylphosphonic and 1,2-Epoxy-2-propylphosphonic Acids," by V. S. Abramov and A. S. Kapustina, Kazan Chemicotechnological Institute imeni S. M. Kirov, Doklady Akademii Nauk SSSR, Vol 111, No 6, 1956, pp 1243-1244

"Dialkylphosphorous acids condense with various aldehydes and ketones [1]. The reaction proceeds readily and vigorously in the presence of catalysts such as alcoholates of alkali metals or organic substances which are basic in nature. The condensation reactions also take place without catalysts. They proceed vigorously with carbonyl compounds such as chloral [2], hexa- and pentachloroacetones, and mildly with nitrobenzaldehyde and benzaldehyde. The presence of a substituent which increases the polarity of the carbonyl group aids the condensation reaction.

"The present article describes the results of investigating the condensation reaction of dialkylphosphorous acids with chloroacetone, which takes place with heating and no catalyst. The most favorable temperature in the interval of 100-120°. The reaction proceeds relatively slowly. The course of the reaction was controlled periodically by measuring the refractive index. The reaction was continued to the point where the refractive index became constant. It must be assumed that the condensation proceeds in the enol form of the dialkylphosphorous acid, and therefore the reaction may be represented by the following equation:

SUN-1377

ANALYSIS, H. J.



The condensation products that were prepared are listed in Table 1.

"The phenol ester of alpha-oxy-chloro-iso-propylphosphonic acid was prepared by Conant and co-workers [3] by treating the reaction product of phosphorus trichloride and chloroacetone with phenol. The acid itself is not described.

"The prepared esters were subjected to treatment with alcoholic solution of potassium hydroxide. As may be expected, we obtained 1,2-epoxy-2-propylphosphonic acid, represented in Table 2. The esters are colorless liquids which distill with no noticeable decomposition. The splitting off of hydrogen from the hydroxyl group and the formation of an oxide ring makes it impossible for the molecule to associate through the hydrogen bond [4]. The C-P bond becomes stable.

54M.1374

KAPUSTINA, A. S.

"It was demonstrated that dialkylphosphorous acids react with heating without a catalyst with chloroacetone and yield esters of alpha-oxy-beta-chloro-iso-propylphosphonic acid. The latter, by splitting off HCl, becomes as ester of 1,2-epoxy-2-propylphosphonic acid. The C-P bond of these esters then becomes stable.

Sum. 1374

Kapustina, N. S.



S/080/63/036/001/018/026  
D204/D307

AUTHORS:

Popova, Z.V., Yanovskiy, D.M., Kirpichnikov,  
P.A., Kapustina, A.S., and Davydova, V.M.

TITLE:

Stabilization of polyvinyl chloride (PVC)  
with esters of alkylphosphinic acid

PERIODICAL:

Zhurnal prikladnoy khimii, v. 36, no. 1,  
1963, 187 - 191

TEXT:

The n-butyl, n-amyl, n-hexyl, n-octyl, iso-propyl, iso-amyl, and phenyl esters of 1,2-epoxy-2-propyl-phosphinic acid were prepared by condensing the corresponding dialkyl phosphorus acids with monochloroacetone, at 100°C, without a catalyst, and removing HCl from the resulting esters of 1-hydroxy-2-chloro-iso-propylphosphinic acid with alcoholic 25 - 35 % KOH. The stabilizing effects of these compounds on the thermal decomposition of PVC were investigated by heating PVC, with and without additions of the phosphinates ( 0-0.5 g per g PVC), to 175, 185, and 195°C. The quantities measured were the induction period until the commencement of HCl evolution (T min), mean integral rate of HCl

Card 1/2

L 10396-67 EWT(m)/EWP(j) JJP(c) RM  
ACC NR: AP7003119

ACC NR: AP7003119

SOURCE CODES: UR/0080/66, 039/007/1572/1576

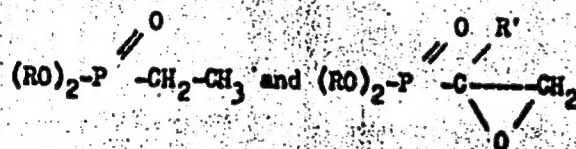
BOGATYREVA, T. K., KAPUSTINA, A. S., KIRPICHNIKOV, P. A., TIKHOVA, N. V., and  
YANOVSKIY, D. M.

**ORG:** none

"Stabilization of Polyvinylchloride by Esters of 1,2-Epoxy-1-phenylethylphosphinic and 1,2-Epoxypropylphosphinic Acids. Report 2"

Moscow, Zhurnal Prikladnoy Khimii, Vol 39, No 7, Jul 66, pp 1572-1576

**Abstract:** The esters of 1,2-epoxy-2-propylphosphinic acid are known to inhibit the thermal decomposition of polyvinylchloride (PVC). The effect of esters of phosphinic acid with the following general formula on the thermal decomposition of PVC was studied to further investigate the stabilizing action of organophosphorus compounds:



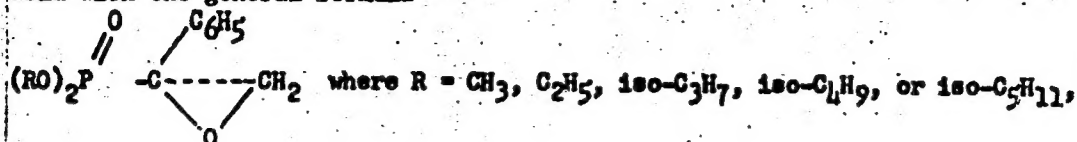
where R = alkyl group, R' = CH<sub>3</sub> or C<sub>6</sub>H<sub>5</sub>.

**Card 1/2**

L 10396-67

ACC NR: AP7003119

The previously undescribed esters of 1,2-epoxy-1-phenylethylphosphinic acid with the general formula



were obtained by the dehydrochlorination of the esters of alpha-hydroxy-alpha-phenyl-beta-chloroethylphosphinic acid.

The stabilizing effect of the esters studied during the thermal decomposition of PVC depends on their structure and on the experimental conditions.

The nature of the esters of 1,2-epoxy-1-phenylphosphinic and 1,2-epoxy-2-propylphosphinic acids in the stabilizing action on the thermal decomposition of PVC was established.

It was shown that the action of the esters is determined by the strength of the carbon-phosphorus bond, and the effect on the stability of the ester molecule depends on the nature of the radical connected to the carbon epoxy ring.

Orig. art. has: 1 figure and 2 tables. [JPES: 38,970]

**TOPIC TAGS:** polyvinyl chloride, ester, phosphinic acid, thermal decomposition

SUB CODE: 07 / SUBM DATE: 09Jun64 / ORIG REF: 003 / OTH REF: 001

Card 212670

KAPUSTINA, A.V.

DEMCHENKO, P.V., kandidat sel'skokhozyaystvennykh nauk; KAPUSTINA, A.V.

Consumption of nutritive substances and energy in highly productive pregnant dry Kholmogory cows. Trudy VNIIC 3:111-139 '56.

(Cows--Feeding and feeding stuffs) (Metabolism) (MLRA 10:4)